CRITERIA FOR EVALUATING ALTERNATIVES

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Listed below are the key criteria which should be considered in evaluating and comparing alternatives. Those criteria which relate directly to the factors SARA §121(b)(1)(A - G) mandates the Agency to assess are marked. A key listing the associated statutory factors is provided. Records of Decision must address these statutory factors; this can be accomplished by referencing or footnoting the factors in summarizing the analysis of alternatives against the nine criteria below.

1. Compliance with ARARs

Alternatives should be assessed as to whether they attain legally applicable or relevant and appropriate requirements of other Federal and State environmental and public health laws, including, as appropriate:

- Contaminant-specific ARARs (e.g., MCLs, NAAQs)[B]
- Location-specific ARARs (e.g., restrictions on actions at historic preservation sites)[B]
- Action-specific ARARs (e.g., RCRA requirements for incineration and closure)[B]

SARA provides six waivers for situations where not all ARARs can be met in §121(d)(4). Use of waivers must be justified in the ROD.

2. Reduction of Toxicity, Mobility or Volume

The degree to which alternatives employ treatment that reduces toxicity, mobility, or volume should be assessed. Factors that might be relevant include:

- The treatment processes the remedies employ and materials they will treat;
- The amount of hazardous materials that will be destroyed or treated;
- The degree of expected reduction in toxicity, mobility or volume;[B]
- The degree to which the treatment is irreversible;
- The residuals that will remain following treatment, considering the persistence, toxicity, mobility, and propensity to bioaccumulate of such hazardous substances and their constituents.[C]

3. Short-Term Effectiveness

The short-term effectiveness of alternatives should be assessed considering appropriate factors among the following:

- Magnitude of reduction of existing risks;
- Short-term risks that might be posed to the community, workers, or the environment during implementation of an alternative including potential threats to human health and the environment associated with excavation, transportation, and redisposal or containment;[D,G]
- Time until full protection is achieved.

4. Long-term Effectiveness and Permanence

Alternatives should be assessed for the long-term effectiveness and permanence they afford along with the degree of certainty that the remedy will prove successful. Factors which might be considered are:

- Magnitude of residual risks in terms of amounts and concentrations of waste remaining following implementation of a remedial action, considering the persistence, toxicity, mobility, and propensity to bioaccumulate of such hazardous substances and their constituents;[A,B,C,G]
- Type and degree of long-term management required, including monitoring and operation and maintenance;[A,B,G]
- Potential for exposure of human and environmental receptors to remaining waste considering the potential threat to human health and the environment associated with excavation, transportation, redisposal, or containment;[D,G]
- Long-term reliability of the engineering and institutional controls, including uncertainties associated with land disposal of untreated wastes and residuals;[A,B,F,G]
- Potential need for replacement of the remedy.[F]

5. Implementability

The ease or difficulty of implementing the alternatives can be assessed by considering the following types of factors:

- Degree of difficulty associated with constructing the technology;
- Expected operational reliability of the technologies;
- Need to coordinate with and obtain necessary approvals and permits (e.g., NPDES, Dredge and Fill Permits for off-site actions) from other offices and agencies;
- Availability of necessary equipment and specialists;
- Available capacity and location of needed treatment, storage, and disposal services.
- Need to respond to other sites (§104 actions only).

6. Cost

The types of costs that should be assessed include the following:

- Capital costs;
- Operation and maintenance costs;[E]
- Costs of five year reviews, where required;
- Net present value of captial and O & M costs;[E]
- Potential future remedial action costs.[F]

7. Community Acceptance

Clearly, a full assessment of community attitudes toward the alternatives cannot be made until the formal public comment period on the proposed plan and RI/FS has been held. Earlier readings of community acceptance of and preferences among the alternatives will depend on the degree and type of community involvement in a project during the RI/FS process. This assessment should look at:

- Components of the alternatives that the community supports;
- Features of the alternatives about which the community has reservations;
- Elements of the alternatives which the community strongly opposes.

8. State Acceptance

States are joint risk managers with EPA in the Superfund process, often taking the lead for remedial investigations and feasibility studies, sharing costs of the remedial actions, and paying for the operation and maintenance of the remedies. Because of close interaction throughout remedial projects, it may not be necessary to address State concerns with proposed alternatives as a specific evaluation criterion when comparing alternatives. In some cases, however, it may be appropriate to consider incorporating such concerns into the evaluation with regard to:

- Components of the alternatives the State supports;
- Features of the alternatives about which the State has reservations;
- Elements of the alternatives under consideration that the State strongly opposes.

9. Overall Protection of Human Health and the Environment

Following the analysis of remedial options against individual evaluation criteria, the alternatives should be assessed from the standpoint of whether they provide adequate protection of human health and the environment considering the multiple criteria.